Best of the AHA Scientific Sessions 2009

Highlights From the American Heart Association Scientific Sessions, November 11-18, 2009, Orlando, FL

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Key words: Acute coronary syndrome • Percutaneous coronary intervention • Atrial fibrillation • Coronary heart disease • Type 2 diabetes • Anemia

Studies presented at the American Heart Association Scientific Sessions contained important data of interest to the practicing cardiologist. This review discusses key trials that evaluated the safety and efficacy of treatment with ticagrelor, intravenous cangrelor, oral dabigatran, high-dose niacin, intravenous iron, and losartan; the effect of the treatment of anemia on cardiovascular events in individuals with chronic kidney disease and type 2 diabetes; and the use of coronary computed tomography angiography (CCTA) in low-risk patients with acute chest pain.

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PLATO Trial

The Platelet Inhibition and Patient Outcomes (PLATO) trial evaluated the safety and efficacy of treatment with ticagrelor, a reversible oral P2Y12 receptor inhibitor, compared with clopidogrel in patients with acute coronary syndromes (ACS).[1]

Patients were randomized in a double-blind manner to ticagrelor (n = 9333; loading dose 180 mg followed by 90 mg twice daily) or clopidogrel (n = 9291; loading dose 300 mg followed by 75 mg daily), with study drug treatment to continue for up to 12 months. All patients received a loading dose of 325 mg of aspirin followed by 75 to 100 mg daily if no stent was placed or 325 mg daily if stent was placed. Patients were followed for up to 12 months.

The primary endpoint of death from vascular causes, myocardial infarction (MI), or stroke by 12 months occurred less frequently in the ticagrelor group compared with the clopidogrel group (9.8% vs 11.7%; $P < .001$). The observation of a significant reduction in a variety of secondary endpoints with ticagrelor compared with clopidogrel including the composite of all-cause mortality, MI, or stroke (10.2% vs 12.3%; $P < .001$) was made. There was a trend toward a greater number of hemorrhagic strokes in the ticagrelor group (0.2% vs 0.1%; $P = 0.10$). All-cause mortality and stent thrombosis

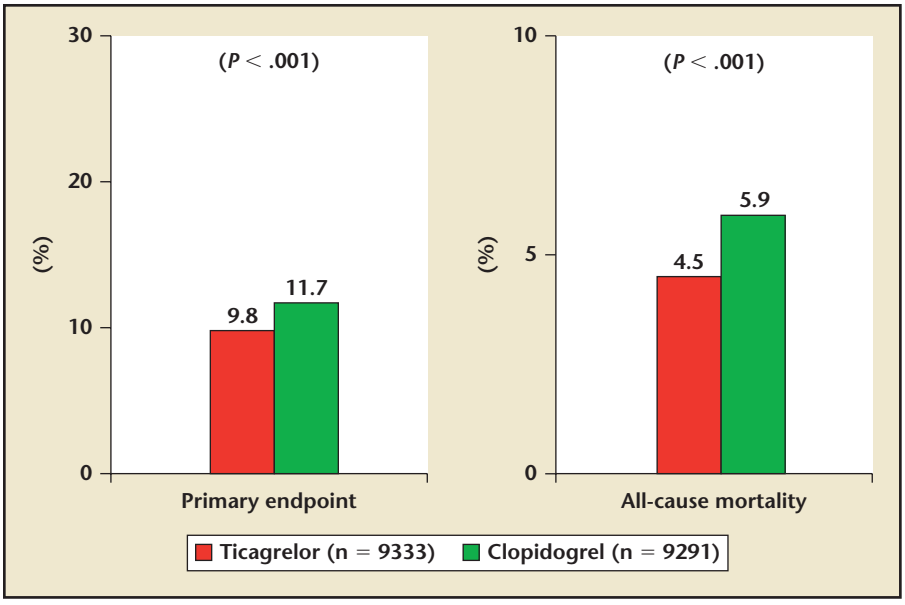


Figure 1. *The Platelet Inhibition and Patient Outcomes (PLATO) trial evaluated the safety and efficacy of treatment with ticagrelor, a reversible oral P2Y12 receptor inhibitor, compared with clopidogrel in patients with acute coronary syndromes (ACS). The results indicated that ticagrelor was superior to clopidogrel for several outcomes including death, myocardial infarction, and stent thrombosis in patients presenting with ACS. Data from Wallentin L et al.[1] Adapted with permission from Cardiosource.*

occurred significantly less frequently with ticagrelor (4.5% vs 5.9%; $P < .001$ and 2.2% vs 2.9%; $P = 0.02$, respectively) (Figure 1).

Major bleeding rates were similar between treatment groups. The secondary safety endpoint of non–coronary artery bypass grafting (CABG)–related thrombolysis in myocardial infarction (TIMI) major bleeding was higher in the ticagrelor group (2.8% vs 2.2%; $P = .03$). Major or minor bleeding was higher in the ticagrelor group using the trial-defined endpoint (16.1% vs 14.6%; $P = .008$). Dyspnea occurred more frequently in the ticagrelor group (13.8% vs 7.8%; $P < .001$). In the subgroup of patients who underwent Holter monitoring during the first week of treatment (n = 2866), ventricular pauses ≥ 3 seconds were more common in the ticagrelor group (5.8% vs 3.6%; $P = 0.01$).

The unique reversible kinetics of ticagrelor make it an ideal antiplatelet agent for use when there is a need for "bridging" in situations where urgent surgeries or invasive procedures need to be performed in patients who have undergone recent drug-eluting stent placement. It also makes patient compliance with dual antiplatelet therapy that much more important as the reversible kinetics could lead to greater risk of loss of platelet activity compared with agents such as prasugrel and clopidogrel, which have nonreversible kinetics.

CHAMPION-PCI

The Cangrelor Versus Standard Therapy to Achieve Optimal Management of Platelet Inhibition–PCI (CHAMPION-PCI) trial compared treatment with intravenous cangrelor with oral clopidogrel, 600 mg, among patients undergoing percutaneous coronary intervention (PCI).[2] Patients were randomized to intravenous cangrelor administered prior to PCI (n = 4367) versus clopidogrel, 600 mg, prior to PCI (n = 4355). Patients included those hospitalized with non–ST-segment elevation acute coronary syndrome (NSTEM-ACS) or ST-elevation (STE) MI if onset of symptoms occurred in the prior 24 hours lasting ≥ 10 minutes while at rest; either (1) persistent STE ≥ 1 mm in ≥ 2 contiguous leads or new left bundle branch block (LBBB) plus planned primary PCI or (2) ≥ 2 of the following: STE changes on electrocardiogram (ECG) indicating ischemia, positive biomarker indicating myocardial necrosis, or 1 of 7 clinical risk factors (age ≥ 60 years, prior MI or CABG, stenosis ≥ 50% in ≥ 2 vessels, prior stroke, transient ischemic attack [TIA], carotid stenosis, or cerebral revascularization, diabetes, peripheral artery disease, or chronic renal dysfunction). Patients excluded from evaluation included those with a contraindication to clopidogrel, concomitant therapy with a strong cytochrome P-450 3A inhibitor or inducer, fibrinolytic therapy within 24 hours prior to randomization, need for oral anticoagulation therapy, and increased risk of bradycardia.

The primary outcome of death, MI, or urgent revascularization at 48 hours was no different between the 2 groups (7.5% of the cangrelor group vs 7.1% of the clopidogrel group; P = NS) (Figure 2). There was no difference in the incidence of bleeding complications. This trial shows the equivalent efficacy and safety of intravenous cangrelor compared with 600 mg of oral clopidogrel in a wide spectrum of patients undergoing PCI.

RE-LY TRIAL

In search of a warfarin replacement, the Randomized Evaluation of Long-Term Anticoagulant Therapy Warfarin, Compared With Dabigatran (RE-LY) trial compared the efficacy and safety of 2 doses of the oral direct thrombin inhibitor dabigatran

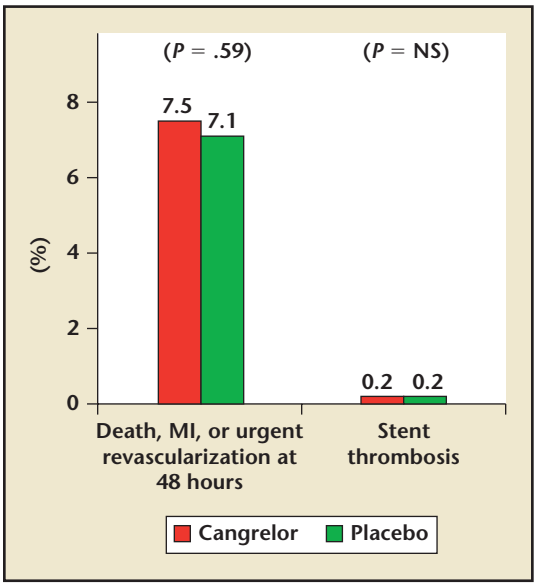


Figure 2. *The Cangrelor Versus Standard Therapy to Achieve Optimal Management of Platelet Inhibition–PCI (CHAMPION-PCI) trial compared treatment with intravenous cangrelor with oral clopidogrel, 600 mg, among patients undergoing percutaneous coronary intervention (PCI). Among patients undergoing PCI for a wide variety of indications, the use of cangrelor was not superior to placebo. MI, myocardial infarction. Data from Harrington RA et al.[2] Adapted with permission from Cardiosource.*

(110 and 150 mg) with warfarin in patients with atrial fibrillation.[3] Patients with persistent, paroxysmal, and permanent atrial fibrillation were randomized to 1 of 2 doses of dabigatran (110 mg, n = 6015; 150 mg, n = 6076) or to open-label warfarin (n = 6022). The warfarin dose was adjusted to a target international normalized ratio (INR) of 2.0 to 3.0.

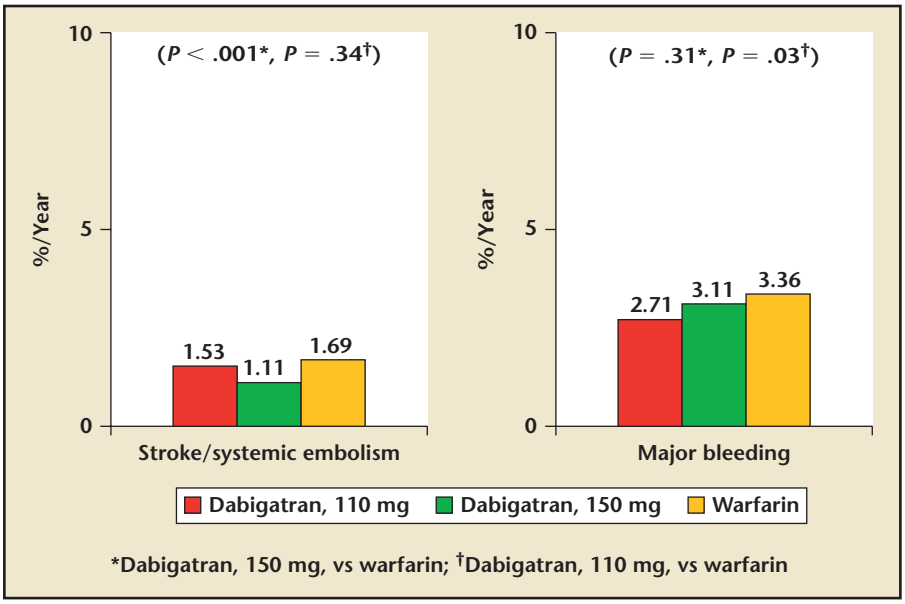
The primary endpoint of stroke or systemic embolism met the noninferiority criteria as it occurred in 1.53% per year in the dabigatran, 110 mg, group and 1.11% per year in the dabigatran, 150 mg, group compared with 1.69% per year in the warfarin cohort (Figure 3). The 150-mg dose of dabigatran met the superiority criteria (relative risk [RR], 0.66; $P < .001$), whereas the 110-mg group did not. The secondary endpoint of stroke was significantly lower in the dabigatran, 150 mg, group (1.01%/year) compared with warfarin (1.57%/year; RR 0.64; $P < .001$). There was no difference between the 110-mg dose and warfarin. Both doses of dabigatran had a lower rate of hemorrhagic stroke compared with warfarin. Compared to the warfarin group, MI trended higher with both dabigatran, 150 mg (0.74%/year vs 0.53%/year; RR 1.38; 95% confidence interval [CI], 1.00-1.91; $P = .048$), and dabigatran, 110 mg (0.72%/year; RR 1.35; 95% CI, 0.98-1.87; $P = .07$).

Death from vascular causes and all-cause mortality were lower in the dabigatran 150-mg group compared with warfarin, but this benefit was not observed with the 110-mg dose.

The primary safety endpoint of major bleeding occurred at a higher rate in the 150-mg dose of dabigatran than in the warfarin group, but was lower in the 110-mg dose. Both doses of dabigatran had significantly lower rates of major or minor bleeding compared with warfarin (14.62%/year for dabigatran, 110 mg, 16.42%/year for dabigatran, 150 mg, and 18.15%/year for warfarin). There was no difference in liver function tests.

The net clinical benefit outcome, defined as a composite of death, MI, stroke, systemic embolism, pulmonary embolism, or major bleeding, favored the dabigatran 150 mg group over warfarin (RR 0.91; $P = .04$), but was no different with the dabigatran, 110 mg, group and warfarin.

Figure 3. *The Randomized Evaluation of Long-Term Anticoagulant Therapy Warfarin, Compared With Dabigatran (RE-LY) trial compared the efficacy and safety of 2 doses of the oral direct thrombin inhibitor dabigatran (110 and 150 mg) with warfarin in patients with atrial fibrillation. Dabigatran could prove to be an alternative to warfarin for chronic anticoagulation; further data are awaited. Data from Connolly SJ et al.[3] Adapted with permission from Cardiosource.*



ARBITER 6-HALTS

The Arterial Biology for the Investigation of the Treatment Effects of Reducing Cholesterol 6–HDL and LDL Treatment Strategies (ARBITER 6-HALTS) trial compared treatment with niacin with ezetimibe treatment among patients who have coronary heart disease (CHD) or considered as CHD equivalents.[4] CHD risk equivalent was defined as those with diabetes, 10-year Framingham risk score > 20%, or a coronary calcium score > 200 for women or > 400 for men and on statin monotherapy with low-density lipoprotein (LDL) cholesterol < 100 mg/dL and high-density lipoprotein (HDL) cholesterol < 55 mg/dL for women or < 50 mg/dL for men. Patients were randomized to extended-release niacin 2000 mg daily (n = 97) versus ezetimibe 10 mg daily (n = 111). At baseline, total cholesterol was 146 versus 147 mg/dL, LDL cholesterol was 81 versus 84 mg/dL, and HDL cholesterol was 43 versus 43 mg/dL, respectively, for niacin versus ezetimibe.

After a mean follow-up of 14 months, the primary outcome, a change in mean carotid intima-media thickness, was −0.0142 mm in the niacin group versus −0.0007 mm in the ezetimibe group (P = .003) (Figure 4). Treatment with ezetimibe led to a greater reduction of LDL cholesterol than niacin (10.0 mg/dL vs 17.6 mg/dL; P = .01), but HDL cholesterol levels were more positively impacted by niacin, with an increase of 7.5 mg/dL versus a 2.8 mg/dL reduction with ezetimibe (P < .001). Major adverse cardiac events were 1% for niacin versus 5% for ezetimibe (P = .04). Adverse drug effects that led to study withdrawal occurred in 62% of the niacin group versus 33% of the ezetimibe group (P = .12).

This study would suggest that in patients with CHD or CHD equivalent who are already on statin therapy and meet current cholesterol treatment goals and who have lower baseline HDL cholesterol levels, high-dose niacin (2000 mg) treatment, which lowers LDL and raises HDL cholesterol, may be superior to ezetimibe treatment, which reduces LDL cholesterol levels. A need to test this hypothesis in larger, randomized, multicenter trials with primary endpoints that are made up of important clinical events including all-cause mortality, cardiovascular mortality, MI, and stroke is warranted.

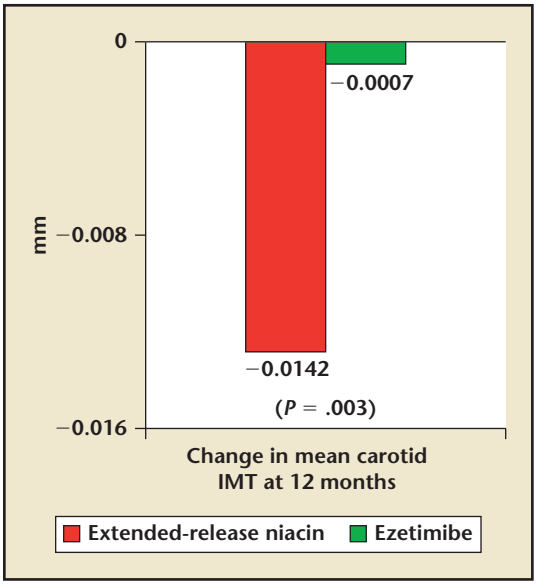


Figure 4. *The Arterial Biology for the Investigation of the Treatment Effects of Reducing Cholesterol 6–HDL and LDL Treatment Strategies (ARBITER 6-HALTS) trial compared treatment with niacin with ezetimibe treatment among patients who have coronary heart disease (CHD) or considered as CHD equivalents. Niacin reduced mean carotid intima-media thickness (IMT) and raised high-density lipoprotein cholesterol. Data from Taylor AJ et al.[4] Adapted with permission from Cardiosource.*

TREAT Trial

The Reduce Cardiovascular Events with Aranesp Therapy (TREAT) trial is the first randomized, controlled trial specifically designed to determine whether treating anemia reduces cardiovascular events in individuals with chronic kidney disease (CKD) and type 2 diabetes.[5]

Patients were randomized in a 1:1 fashion to receive either the erythropoietin-stimulating agent (ESA) darbepoetin alfa or placebo (n = 4038). The median duration of diabetes was about 15.4 years, with a median glycated hemoglobin level of 7.0%, a median serum creatinine of 1.8 mg/dL, a median estimated glomerular filtration rate (eGFR) of 34 mL/min/1.73 m^2, and mean baseline hemoglobin level was 10.4 g/dL. Patients were followed for a mean of 29 months. Inclusion criteria included type 2 diabetes mellitus, CKD with eGFR of 20-60 mL/min/1.73 m^2, hemoglobin level of < 11.0 g/dL, and transferrin saturation of ≥ 15%. Patients were excluded if they had uncontrolled hypertension, received a previous kidney transplant or had scheduled receipt of kidney transplant from living donor, were currently treated with intravenous antibiotics or were receiving chemotherapy or radiation therapy, have cancer, been diagnosed with human immunodeficiency virus (HIV) infection, were actively bleeding, have any hematologic disease, were pregnant, or have a history of a cardiovascular event, grand mal seizure, major surgery, or ESA use 12 weeks prior to randomization.

The primary endpoint of death, MI, unstable angina, heart failure, or

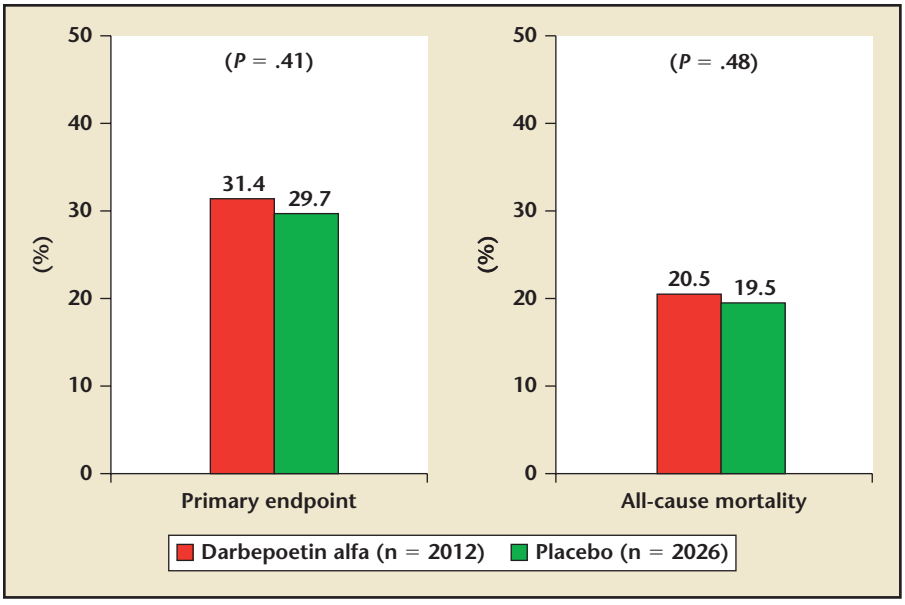


Figure 5. *The Reduce Cardiovascular Events with Aranesp Therapy (TREAT) trial is the first randomized, controlled trial specifically designed to determine whether treating anemia reduces cardiovascular events in individuals with chronic kidney disease and type 2 diabetes. Use of darbepoetin alfa in anemic patients at high risk for cardiovascular and renal events is not associated with superior outcomes. Its potential association with a higher risk of stroke, thromboembolic episodes, and hypertension argues against its routine use. Data from Pfeffer MA et al.*[5] *Adapted with permission from Cardiosource.*

stroke was similar between the darbepoetin alfa and placebo arms (31.4% vs 29.7%; P = ns) (Figure 5). Individual endpoints such as all-cause mortality (20.5% vs 19.5%; P = .48) and MI (6.2% vs 6.4%; P = .73) were similar between the 2 arms, except stroke was higher in the darbepoetin alfa arm (5% vs 2.6%; $P <$ .001). From 3 months to the end of follow-up, the median hemoglobin level was higher in the darbepoetin alfa arm (12.5 vs 10.6 g/dL). Erythrocyte transfusion was lower in the darbepoetin alfa arm as compared with placebo (14.8% vs 24.5%; $P <$ .001). Diastolic blood pressure was higher in the darbepoetin alfa arm (median, 73 vs 71 mm Hg; $P <$ .001. Venous (2.0% vs 1.1%; P = .02) and arterial (8.9% vs 7.1%; P = .04) thromboembolic events were more frequent in the darbepoetin alfa arm.

The results of the large TREAT trial indicate that the routine use of ESAs in patients with mild anemia, diabetes, and CKD who are not on dialysis is not associated with a reduction in renal and cardiovascular events. There was a reduction in the need for packed erythrocyte transfusion with darbepoetin alfa, but also a higher risk of venous and arterial thromboembolic events. Whether these results can be extrapolated to treating similar populations of patients with more severe anemia to lower hemoglobin goals remains an unanswered and important question.

FAIR-HF Trial

The Ferinject Assessment in Patients with Iron Deficiency and Chronic Heart Failure (FAIR-HF) trial compared treatment with intravenous iron with placebo among patients with chronic heart failure and iron deficiency.[6] Patients with chronic heart failure and iron deficiency (with or without anemia) were randomized to intravenous iron (ferric carboxymaltose) (n = 304) versus placebo (n = 155). Patients included in this trial had chronic heart failure (left ventricular ejection fraction [LVEF] 40% or less with New York Heart Association [NYHA] class II functional capacity or LVEF 45% or less with NYHA class III functional capacity), iron deficiency (ferritin level $<$ 100 μg/L or 100-299 μg/L if transferrin saturation $<$ 20%), and hemoglobin between 9.5 and 13.5 g/dL. Patients were excluded if they had uncontrolled hypertension, other clinically significant heart disease, significant liver or renal disease, or inflammation. In the iron group, patients received 200 mg of intravenous iron weekly until iron stores were replete, then every 4 weeks for a total of 24 weeks.

The primary outcome, Patient Global Assessment at 24 weeks, was reported as much or moderately improved in 50% of the intravenous iron group versus 28% of the placebo group ($P <$ .001). NYHA class I or II at 24 weeks was 47% versus 30% ($P <$ .001), respectively (Figure 6). Among patients with chronic heart failure and iron deficiency, the use of intravenous iron for 24 weeks resulted in improved symptoms, functional capacity, and quality of life. These results suggest that in the assessment of ambulatory patients with symptomatic heart failure and systolic dysfunction, laboratory investigations to detect iron deficiency may be useful in routine practice to decide whether symptom management, by means of treatment with intravenous iron, may provide clinical benefit.

HEAAL Trial

The Heart Failure Endpoint Evaluation of Angiotensin II Antagonist Losartan (HEAAL) trial compared treatment with high-dose (150 mg) versus low-dose losartan (50 mg) in patients with heart failure and LVEF

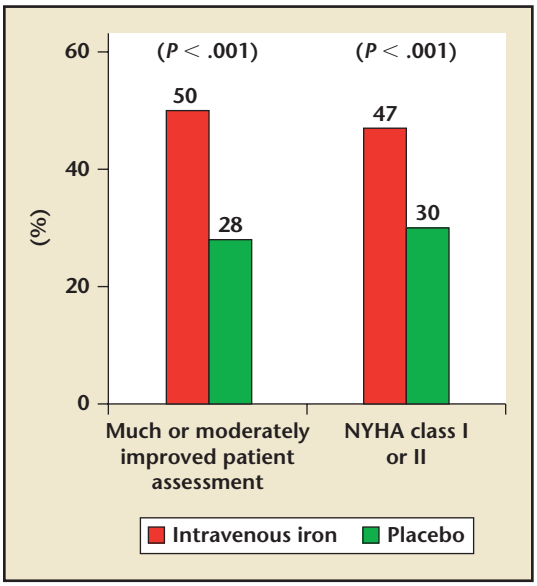


Figure 6. *The Ferinject Assessment in Patients with Iron Deficiency and Chronic Heart Failure (FAIR-HF) trial compared treatment with intravenous iron with placebo among patients with chronic heart failure and iron deficiency. The use of intravenous iron for 34 weeks was beneficial and appeared to be safe. NYHA, New York Heart Association. Data from Anker SD et al.[6] Adapted with permission from Cardiosource.*

less then 40%.[7] Patients were excluded if they were pregnant or lactating, intolerant to angiotensin-receptor blockers, had systolic blood pressure < 90 mm Hg, had significant valvular heart disease, myocarditis, or pericarditis, percutaneous coronary intervention, coronary artery bypass grafting, myocardial infarction, unstable angina, or stroke/transient ischemic attack within the last 12 weeks, renal artery stenosis, renal insufficiency, hypo- or hyperkalemia, liver disease, or anemia.

At a median of 4.7 years, the primary outcome, all-cause mortality or heart failure admission, was 11.1 per 100 patient-years in the 150-mg group versus 12.4 per 100 patient-years in the 50-mg group ($P = .027$) (Figure 7). All-cause mortality or cardiovascular admission (per 100 patient-years) was 15.6 in the high-dose group versus 17.0 ($P = .068$) in the low-dose cohort. There was no significant difference in all-cause mortality (7.6 vs 8.2; $P = .24$), but there was a reduction in heart failure and cardiovascular admissions. Hyperkalemia (per 100 patient-years) was 2.79 versus 1.87 ($P = .0004$), hypotension was 2.92 versus 2.07 ($P = .002$), increased creatinine was 7.12 versus 4.73 ($P < .0001$), and angioedema was 0.08 versus 0 ($P = 0.03$), respectively, for 150 mg versus 50 mg of losartan.

In patients with heart failure due to left ventricular systolic dysfunction who are angiotensin-converting enzyme (ACE) inhibitor intolerant, high-dose losartan does provide incremental benefit. However, it is also associated with more adverse events.

High-dose losartan resulted in more adverse events including hyperkalemia, hypotension, renal insufficiency, and angioedema. This study does not provide insight into high-dose angiotensin-receptor blocker therapy among patients who tolerate ACE inhibitors. Therefore, carefully maximizing the dose of angiotensin-receptor blockers may prove beneficial in patients with heart failure related to left ventricular dysfunction.

BARI 2D

Bypass Angioplasty Revascularization Investigation 2 Diabetes (BARI 2D) is a study of patients with type 2 diabetes mellitus with mild or stable cardiac symptoms designed to determine whether treatment targeted to attenuate insulin resistance can stop or slow down progression of CAD compared with an insulin-providing approach.[8-11] Patients were included in the study if they had a diagnosis

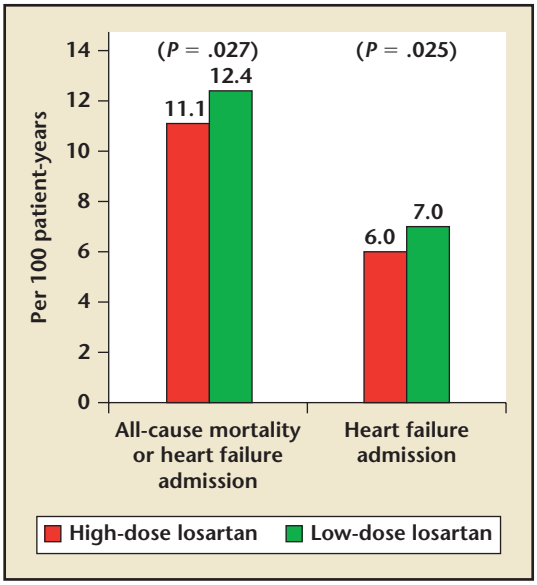


Figure 7. *The Heart Failure Endpoint Evaluation of Angiotensin II Antagonist Losartan (HEAAL) trial compared treatment with high-dose (150 mg) versus low-dose losartan (50 mg) in patients with heart failure and left ventricular ejection fraction less then 40%. Among patients with heart failure due to left ventricle systolic dysfunction who are intolerant of angiotensin-converting enzyme inhibitors, the use of high-dose losartan was beneficial. Data from Konstam MA et al.[7] Adapted with permission from Cardiosource.*

of type 2 diabetes mellitus, with a coronary angiogram showing 1 or more vessels amenable to revascularization (≥ 50% stenosis) by at least 1 of the available methods and objective documentation of ischemia or subjectively documented typical angina with > 70% stenosis in at least 1 artery. Patients were excluded if there was a definite need for invasive intervention, had previous CABG or prior PCI within the past 12 months, NYHA class III or IV congestive heart failure, serum creatinine > 2.0 mg/dL, glycated hemoglobin > 13% left main stenosis > 50%, liver disease (alanine aminotransferase > 2 times the upper limit of normal), fasting triglycerides > 1000 mg/dL, or chronic steroid use.

The occurrence of the primary outcome, 5-year mortality, was 11.7% in the revascularization group versus 12.2% in the medical therapy group (P = .97) and 11.8% in the insulin-sensitizing group versus 12.1% in the insulin-providing group (P = .89). Major adverse cardiac events (combination of death, MI, or stroke at 5 years, was 22.8% with revascularization versus 24.1% with medical therapy (P = .70) and 22.3% with insulin-sensitizing therapy versus 24.6% with insulin-providing therapy (P = .13) (Figure 8).

In the PCI stratum, there was no difference in all-cause mortality, MI, or major adverse cardiac events compared with medical therapy. In the CABG stratum, there was no difference in all-cause mortality or cardiac death, but the incidence of MI (10.0% vs 17.6%; P = .003) and major adverse cardiac events (22.4% vs 30.5%; P = .01) was reduced in the CABG patients compared with medical therapy.

Among patients with diabetes and stable coronary artery disease, a strategy of revascularization by PCI or CABG failed to demonstrate superiority to medical therapy over a mean of 5.3 years. However, 42% of the medical therapy group had crossed over and underwent a revascularization. Therefore, from an actual treatment cohort the medical arm really represents a combination of medical therapy and revascularization. There was also no notable benefit from insulin-sensitizing therapy versus insulin-providing therapy. Therefore, in diabetic patients with relatively low-risk obstructive coronary artery disease, medical therapy is a reasonable approach for initiation of therapy, realizing that there will be a high likelihood that the patient will ultimately undergo a revascularization procedure. Cardiovascular events seemed to be similar in the insulin cohort compared with those receiving insulin-sensitizing therapy.

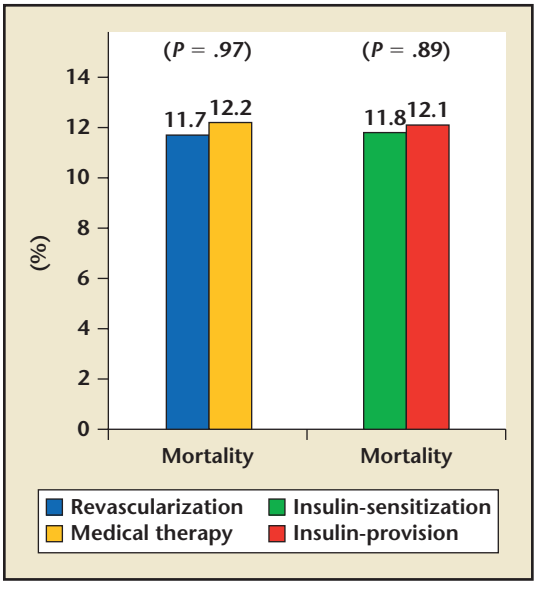


Figure 8. *Bypass Angioplasty Revascularization Investigation 2 Diabetes (BARI 2D) is a study of patients with type 2 diabetes mellitus with mild or stable cardiac symptoms designed to determine whether treatment targeted to attenuate insulin resistance can stop or slow down progression of CAD compared with an insulin-providing approach. There was no notable benefit from insulin-sensitizing therapy versus insulin-providing therapy. Data from References 8-11. Adapted with permission from Cardiosource.*

CT-STAT Trial

The goal of Coronary Computed Tomography for Systemic Triage of Acute Chest Pain Patients to Treatment (CT-STAT) trial was to compare CCTA with standard stress testing in 701 low-risk patients presenting to the emergency department with acute chest pain.[12]

This being an assessment of lower cardiac risk patients was confirmed in the CCTA group, as no significant stenosis was found in 82% of patients, at least 1 severe stenosis (> 70%) was found in in 7.5%, and moderate stenosis (25%-70%) was found in 6.3%. The time to make a diagnosis was reduced 54% (P = .0001) and costs to diagnosis were reduced from approximately $3500 to $2200 ($P$ = .0001) with CCTA. Based on these results, in low-risk patients with acute chest pain, CCTA ruled out severe disease in 82% and decreased the time to diagnosis and costs associated with making a diagnosis. Based on these results, it would seem that you can extrapolate the utility of CCTA in low-risk acute chest pain symptoms to settings outside of emergency departments such as in cardiovascular imaging centers

and perhaps reduce costs of care even further. ■

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Main Points

- The unique reversible kinetics of ticagrelor make it an ideal antiplatelet agent for use when there is a need for "bridging" in situations where urgent surgeries or invasive procedures need to be performed in patients who have undergone recent drug-eluting stent placement.
- The Cangrelor Versus Standard Therapy to Achieve Optimal Management of Platelet Inhibition–PCI trial shows the equivalent efficacy and safety of intravenous cangrelor compared with 600 mg of oral clopidogrel in a wide spectrum of patients undergoing percutaneous coronary intervention (PCI).
- Dabigatran could prove to be an alternative to warfarin for chronic anticoagulation; further data are awaited.
- For patients with coronary heart disease (CHD) or CHD equivalent who are already on statin therapy and meet current cholesterol treatment goals and who have lower baseline high-density lipoprotein cholesterol levels, high-dose niacin (2000 mg) treatment may be superior to ezetimibe treatment.
- The results of the large TREAT trial indicate that the routine use of erythropoietin-stimulating agents in patients with mild anemia, diabetes, and chronic kidney disease who are not on dialysis is not associated with a reduction in renal and cardiovascular events.
- In the assessment of ambulatory patients with symptomatic heart failure and systolic dysfunction, laboratory investigations to detect iron deficiency may be useful in routine practice to decide whether symptom management, by means of treatment with intravenous iron, may provide clinical benefit.
- Among patients with diabetes and stable coronary artery disease, a strategy of revascularization by PCI or coronary artery bypass graft failed to demonstrate superiority to medical therapy over a mean of 5.3 years. However, 42% of the medical therapy group had crossed over and underwent a revascularization.
- Based on results of the CT-STAT trial, it would seem that the utility of coronary CT angiography in low-risk acute chest pain symptoms can be extrapolated to settings outside of emergency departments such as in cardiovascular imaging centers and perhaps reduce costs of care even further.